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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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			ART UNIT 4117	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/731,190

Applicant(s)

EL-BATAL ET AL.

Examiner

Madhu Khanna

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 11/06/2006, 05/21/2007.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 7-14 are rejected under 35 U.S.C. 101 because the claimed invention is directed to a network and that as such it fails to be any of the categories of patentable subject matter.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1, 3, 5-7 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(i) In claim 7 the limitation recites:

a network architecture having said maximum number of addresses
corresponding to said maximum number of devices;

a plurality of devices attached to said network, the number of said plurality
of devices corresponding to said maximum number of addresses;

It is not clear how there can be an unallocated address that is not used by

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another device if the number of the plurality of devices attached to the network corresponds to maximum number of addresses, indicating that the maximum number of addresses (or all) of the network are occupied by the maximum number of devices. [AS BEST UNDERSTOOD] For purposes of examination it will be assumed that one of the plurality of devices is removed from the network before the spare determines an unallocated address.

(ii) In claim 12 the limitation recites:

a device means for individually communicating on said network, said device means being greater than the number of addresses available on said network, at least one of said device means being a spare device means;

It is not clear if the device means refers to the means for communication between the devices or to the devices themselves. [AS BEST UNDERSTOOD] For purposes of examination it will be assumed that the first device means refers to a network communication means and the second device means refers to the devices communicating on the network.

(iii) Claim 1 recites the limitation "said maximum number of devices" in the first portion of the claim limitations. There is insufficient antecedent basis for this limitation in the claim, as it is not previously mentioned.

(iv) Claim 3 recites the limitation "said first number of devices" in the first portion of the claim limitations. There is insufficient antecedent basis for this limitation in the claim, as it is not previously mentioned.

(v) Claim 5 recites the limitation "said devices". There is insufficient antecedent basis for this limitation in the claim, as more than one set of devices are previously mentioned.

(vi) Claim 6 recites the limitation "said devices". There is insufficient antecedent basis for this limitation in the claim, as more than one set of devices are previously mentioned.

(vii) Claim 7 recites the limitation "said maximum number of addresses" in the first portion of the claim limitations. There is insufficient antecedent basis for this limitation in the claim, as it is not previously mentioned.

(viii) Claim 12 recites the limitation "said first means" in the second portion of the claim limitations. There is insufficient antecedent basis for this limitation in the claim, as it is not previously mentioned.

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Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swales (U.S. Patent # 6,982,953) (referred to as Swales hereafter) in view of Wang et al. (U.S. Patent # 6,470,382) (referred to as Wang hereafter).

Regarding claim 1, Swales teaches managing devices on a network comprising:

connecting a number of devices to said network (Fig 1 and 2; column 14 lines 4-11);

setting an individual address (IP address) for each of said number of devices (column 14 lines 12-13);

providing at least one spare device (working device 110), said at least one spare device being capable of determining and using addresses of failed devices on said network (IP address of failed device 100 is assigned to a new device 110, column 14 lines 35-43);

operating said network with said number of devices (column 14 lines 8-12);

determining that at least one of said number of devices has failed (polling, column 15 lines 23-27);

removing said at least one of said devices from said network whenever said at least one of said devices has failed (faulty device 100, column 15 lines 30-33), said at least one of said devices having a first address (column 14 lines 12-13);

connecting (install) said at least one spare device (replacement device 110) to said network (column 15 lines 30-33);

determining said first address by said at least one spare device (BOOTP request, column 15 lines 30-39);

assuming said first address by said at least one spare device (same IP address as faulty device 100, column 15 lines 36-39); and

operating said network with said at least one spare device in place of said at least one of said number of devices (column 14 lines 40-43); however, Swales does not explicitly teach a maximum amount of addresses and devices, as claimed.

Wang teaches a method/system for managing more devices (e.g. SCSI devices) on a network than the maximum number of addresses comprising:

providing said number (limited quantity) of devices which are limited by the quantity of unique addresses available (column 6 lines 60-65);

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Wang in the Swales system. Specifically, the teachings of Wang for dynamically connecting/attaching, managing, and accessing a networked device (e.g. LAN-attached SCSI and netSCSI devices) are reasonably usable to one of ordinary skill in the Swales system, directed to and/or pertaining also to the management of devices, particularly the automatic assignment of a network address after replacing a failed device. Wang discusses as prior art connecting a maximum number (e.g. sixteen) of functionally addressable devices connectable on a network, wherein the maximum number of devices is contingent to the used interface standard limitation used between computers and peripheral devices (e.g. hard drives, CD-ROM drives, scanners, etc.) (see column 1, lines 14-30). Recommending using a network other than a SCSI bus to overcome this limitation (e.g. Server area networks (SAN) currently use a Fiber Channel (FC) medium to communicate with SCSI devices, a Local Area Network (LAN) or an Internet Protocol (IP) Network (column 1, lines 31-36). Particularly, where specific network types and protocols can increase the maximum number of possible devices (e.g. netSCSI devices) connectable to the network with a maximum quantity of unique possible network addresses based on the network types and protocols (see column 3, lines 36-48).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made in view of the teachings of Wang, that the Swales system operating with the same network types and protocols exemplified by Wang does have a maximum number of devices connected to the network and a maximum number of addresses usable on the network. One of ordinary skill in the art would have been motivated to utilize the teachings of Wang in the Swales system because in doing so it would enable the Swales system to connect more devices to the network, increase the distance from the device to a computer and automate network address assignments, as taught by Wang.

Regarding claim 2, wherein said step of setting an individual address for each of said maximum number of devices comprises assigning a predetermined address for at least one of said spare device replacing a failed device (Swales: column 14 lines 12-17).

7. Claims 3-8 and 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swales-Wang in further view of Hanan et al. (U.S. Patent # 6,792,486) (referred to as Hanan hereafter).

Regarding claim 3, the above-mentioned prior art does not teach where the network devices are connected to switches, which are connected to a controller, adapted to switch the devices in and out of the network.

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Hanan teaches connecting each one of a number of devices and at least one spare device to a switch (one switch for each disk drive, column 3 lines 47-52), said switch being adapted to switch said each of said number of devices into and out of said network (column 12 lines 19-24); and

connecting each of said at least one switch to a controller (switch controller 101) adapted to control said at least one switch (for switching in and out disk drives, column 12 lines 19-24).

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention given the teachings of Swales for automatically determining the address of a failed device to utilize the teachings of Hanan for connecting each of the devices to a switch capable of switching a device into and out of the network utilized to electronically disconnect the failed device from the network and connecting the spare device as a replacement for the failed device. One would be motivated to utilize the teachings of Hanan because in doing so the available spare devices to replace a failed device would be switched into the network when the failed device is switched out, the swap being automatic without the need for maintenance personnel.

Regarding claim 4, said step of determining that at least one of said maximum number of devices needs to be removed from said network is performed by said controller (monitor agent) (Swales: column 15 lines 23-27).

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Regarding claim 5, said devices comprises a plurality of data storage devices (Hanan: column 3 lines 24-34).

Regarding claim 6, said devices are arranged as at least a portion of a RAID system (Hanan: column 15 lines 19-28).

Regarding claim 7, a network having a limited number of devices (Wang: column 6 lines 60-65) and at least one spare device (Hanan: column 12 lines 10-14) comprising:

- a network architecture having said limited number of addresses (Wang: quantity of unique addresses available, column 6 lines 60-65) corresponding to said limited number of devices (Swales: column 14 lines 12-13);

- a plurality of devices attached to said network (Swales: column 14 lines 8-11), the number of said plurality of devices corresponding to said limited number of addresses (Swales: column 14 lines 12-13);

- at least one spare device adapted to determine (by requesting from the monitor agent managing the network) an unallocated address that is not used by another device and using said unallocated address as the network address for said at least one spare device (Swales: column 14 lines 35-43; Wang: column 19 line 67-column 20 lines 1-3);

- a plurality of switches attached to each of said plurality of devices and said at least one spare device (Hanan: column 3 lines 47-52) and adapted to connect and disconnect said each of said plurality of devices and said at least one spare device to and from said network (Hanan: column 12 lines 19-24); and

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a controller adapted to control each of said plurality of switches (Hanan: column 12 lines 27-32).

Regarding claim 8, said controller is further adapted to:

Assess (polls) the status of each of said plurality of devices (Swales: column 15 lines 23-27);

determine that one of said plurality of devices is improperly functioning (malfunctions) (Swales: column 15 lines 23-27);

cause a first of said plurality of switches to disconnect (switch out) said one of said plurality of devices from said network (Hanan: column 12 lines 19-22); and

cause a second of said plurality of switches to connection (switch in) said at least one spare device to said network (Hanan: column 12 lines 22-24).

Regarding claim 10, the claim is substantially the same as claim 5, same rationale of rejection is applicable.

Regarding claim 11, the claim is substantially the same as claim 6, same rationale of rejection is applicable.

Regarding claim 12, a network with automated spares comprising:

a device means for individually communicating on said network (Swales: column 14 lines 5-7), said device means being greater than the number of addresses available

on said network (Wang: column 19 lines 4-7), at least one of said device means being a spare device means (Hanan: column 12 lines 10-14);

a switch means connected to each of said device means and adapted to connect or disconnect each of said first means to said network individually (Hanan: column 3 lines 47-52; column 12 lines 19-24); and

a controller means for determining if at least one of said device means is to be removed from said network (Swales: column 15 lines 23-33), causing said switch means to disconnect said at least one device means from said network and connecting said spare device means to said network (Hanan: column 12 lines 19-24).

Regarding claim 13, this network claim comprises limitation(s) substantially the same as those discussed on claim 5 above, same rationale of rejection is applicable, wherein the method steps further comprise the modules for performing respective function/steps discussed therein, same rationale of rejections is applicable.

Regarding claim 14, this network claim comprises limitation(s) substantially the same as those discussed on claim 6 above, same rationale of rejection is applicable, wherein the method steps further comprise the modules for performing respective function/steps discussed therein, same rationale of rejections is applicable.

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8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Swales in view of Wang in view of Hanan and in further view of Corrington et al. (U.S. Patent # 6,076,142) (referred to as Corrington hereafter).

Regarding claim 9, although Hanan discloses a system reset or re-boot (Hanan: column 12 lines 50-53), and Wang discloses a device having to reboot after initial attachment and assignment is completed (Wang: column 19 lines 58-60), the above-mentioned prior art do not explicitly teach where the controller is adapted to reset the network/system.

Corrington teaches said controller is further adapted to reset said network (column 17 lines 35-37).

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention given the teachings of Swales for replacing failed devices to utilize the teaching of Corrington of a Restart System instructing the RAID controller to restart the RAID system. One would be motivated to utilize the teachings of Corrington because in doing so the controller implemented in the system/method of Swales for monitoring the devices and controlling the switches will additionally be capable of resetting or rebooting the network when necessary.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Madhu Khanna whose telephone number is 571-270-3629. The examiner can normally be reached on Mon-Thurs 7:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Beatriz Prieto can be reached on 571-272-3902. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Madhu Khanna
TC 2100
Patent Examiner
10/09/2007




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